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PATENT ABSTRACTS OF JAPAN

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(71)Applicant : SEGA ENTERP LTD

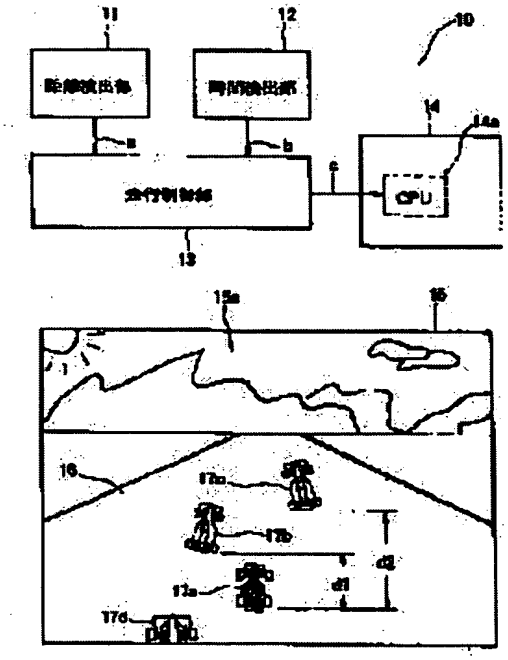
(72)Inventor : TSUCHIYA JUNICHI

(54) MOVING COMPETITION GAME DEVICE

(57)Abstract:

PURPOSE: To provide the moving competition game device which more improves reality by introducing the factors of a competition in a real moving competition.

CONSTITUTION: Concerning the moving competition game device for making the competition with plural moving means to move on a set course, this device is provided with a distance detecting part (distance detecting means) 10 for detecting a separate distance (d) between an automobile (prescribed moving means) 17a and a preceding vehicle (preceding moving means) 17b positioned in front of the automobile 17a, time detecting part (time detecting means) 12 for detecting the time of approach for the automobile 17a to be positioned within the fixed separate distance, and travel control part (travel control means) 13 for calculating a pressure index based on the separate distance (d) and the time of approach and controlling the traveling state of the preceding vehicle 17b corresponding to the pressure index.



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CLAIMS

[Claim(s)]
[Claim 1] In the migration competition game equipment which competes with two or more migration means to move in a setting course top A distance detection means to detect the clearance of a predetermined migration means and a front ****** means by which it is located before said predetermined migration means, A time amount detection means by which said predetermined migration means detects the approach time amount located in fixed clearance from said front ****** means, Migration competition game equipment characterized by having the transit control means which calculates the pressure characteristic based on said clearance and said approach time amount, and controls the run state of said front ****** means corresponding to said pressure characteristic.
[Claim 2] It is migration competition game equipment characterized by having a speed detection means to detect the passing speed of said predetermined migration means, in migration competition game equipment according to claim 1, and for said transit control means calculating the pressure characteristic based on said clearance, said approach time amount, and said passing speed, and controlling the run state of said front ****** means corresponding to said pressure characteristic.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to the migration competition game equipment which performs the ball-race game which game-ized the car race.
[0002]
[Description of the Prior Art] Conventionally, the migration competition game equipment which competes with two or more migration means to move in a setting course top is known. As such migration competition game equipment, image display of two or more automobiles (migration means) which run a ball-race course and the ball-race course top for example, on a scope is carried out, and there is ball-race game equipment with which a player controls the transit direction and travel speed of an automobile, and makes it run a ball-race course top.
[0003] And while two or more players control each automobile and make it run a ball-race course top for example, it passes, or a course is closed or it vies in whether carry out and the automobile of which player reaches gall previously.
[0004]
[Problem(s) to be Solved by the Invention] however, the ball-race game equipment which can perform the game in which the game of the versatility which has a sense of reality more takes for appearing, and a nearby sense of reality has it in a ball-race game with a more advanced expression -- ** -- there is a request to say. This invention is made in view of the above-mentioned request, and the purpose is in offering the migration competition game equipment which takes in the element of the competition in an actual migration competition, and has a reliance sense of reality.
[0005]
[Means for Solving the Problem] In the migration competition game equipment which competes with two or more migration means by which the above-mentioned purpose moves in a setting course top A distance detection means to detect the clearance of a predetermined migration means and a front ****** means by which it is located before said predetermined migration means, A time amount detection means by which said predetermined migration means detects the approach time amount located in fixed clearance from said front ****** means, The pressure characteristic based on said clearance and said approach time amount is calculated, and it is attained by the migration competition game equipment characterized by having the transit control means which controls the run state of said front ****** means corresponding to said pressure characteristic.
[0006] Moreover, it has a speed detection means to detect the passing speed of said predetermined migration means, and said transit control means calculates the pressure characteristic based on said clearance, said approach time amount, and said passing speed, and is attained by the migration competition game equipment characterized by controlling the run state of said front ****** means corresponding to said pressure characteristic.
[0007]
[Function] In the migration competition game equipment which competes with two or more migration

means to move in a setting course top according to this invention A distance detection means to detect the clearance of a predetermined migration means and a front ****** means by which it is located before a predetermined migration means, A time amount detection means by which a predetermined migration means detects the approach time amount located in fixed clearance from a front ****** means, From having the transit control means which calculates the pressure characteristic based on clearance and approach time amount, and controls the run state of a front ****** means corresponding to a pressure characteristic It can consider as the migration competition game which takes in the element of the competition in an actual migration competition that a front ****** means causes a transit mistake with the pressure characteristic which a predetermined migration means generates, and has a reliance sense of reality.

[0008] Moreover, it has a speed-detection means detect the passing speed of a predetermined migration means, and since a transit control means calculates the pressure characteristic based on clearance, approach time amount, and passing speed and controls the run state of a front ****** means corresponding to a pressure characteristic, it can make the pressure characteristic which a predetermined migration means generates the migration competition game in which passing speed of an introduction reliance sense of reality also increased still more elements of the competition in an actual migration competition as an element.

[0009]

[Example] Hereafter, the migration competition game equipment by one example of this invention is explained with reference to a drawing. As shown in drawing 1 , ball-race game equipment (migration competition game equipment) 10 has the distance detecting element (distance detection means) 11, the time amount detecting element (time amount detection means) 12, the transit control section (transit control means) 13, and the game control section 14.

[0010] As shown in drawing 2 , this ball-race game equipment 10 two or more automobiles 17a, 17b, 17c, and 17d which run its ball-race course (setting course) 16 and ball-race course 16 top on screen 15a of a display 15 When image display is carried out based on a game program and a player (not shown) controls its transit direction and travel speed of an automobile (for example, automobile 17a) to arbitration through an actuation means (not shown), the ball-race game which vies in the order of arrival to gall is performed.

[0011] In addition, although four automobiles are displayed on drawing 2 , the number of automobiles is not restricted to four sets. Transit of automobile 17a is controlled without being extracted by 17d of consecutiveness vehicles which extract the cars in front (front ****** means) 17b and 17c which run their automobile (predetermined migration means) 17a front, and run the back of automobile 17a turning a player to right and left, or making it not separate from the ball-race course 16 which width of face was changed on the occasion of transit of an automobile, and was set up.

[0012] The distance detecting element 11 has detected the clearance d1 (or d2) of two automobiles 17a which gets mixed up, and car-in-front 17b (or 17c), and sends out the detected clearance data a to the transit control section 13 at any time. The time amount detecting element 12 has detected the approach time amount t to which automobile 17a is located in the fixed clearance d from car-in-front 17b (or 17c) by timer management, and while being located in the fixed clearance d, it sends out detected approach time data b to the transit control section 13. This fixed clearance d is set as arbitration by the class and approach of a game.

[0013] The transit control section 13 calculates the pressure characteristic based on the approach time amount t by the clearance d by the clearance data a, and approach time data b, and if it becomes beyond the predetermined value (mistake generating reference value) to which this pressure characteristic was set beforehand, it sends out the mistake generating signal c to the game control section 14. A pressure characteristic shows the lifting easy degree from which the automobile under transit starts a transit mistake, and the probability for a pressure characteristic to take for becoming large and to generate a transit mistake becomes high.

[0014] This pressure characteristic is prescribed by the clearance d of two automobiles which get mixed up, and the approach time amount t, and can be expressed with the formula of the pressure characteristic

=(1 / clearance d) x approach time amount t. That is, when automobile 17a is located in the fixed clearance d which approached car-in-front 17b and was set up beforehand and maintains the condition in between beyond fixed time amount, for example, the pressure characteristic corresponding to a maintenance condition is given to car-in-front 17b. A pressure characteristic becomes large, so that the approach time amount t is naturally so long that Clearance d is short.

[0015] The operation procedure of a pressure characteristic is explained based on the flow chart of drawing 3 . First, two automobiles (for example, automobile 17a and car-in-front 17b.) The clearance d1 (refer to drawing 2) of referring to drawing 2 is computed (step S1). Then, it is judged whether the computed clearance d1 became below constant value (step S2).

[0016] Here, when clearance d1 becomes below constant value (YES), count-up of a timer is performed and the approach time amount t which is the time amount by which clearance d1 was maintained below at constant value is measured (step S3). On the other hand, a timer is cleared and (NO) case returns to an initial state (step S4). [from which clearance d1 does not become below constant value] That is, for example, if car-in-front 17b separates and clearance d1 is no longer below constant value after clearance d1 becomes below constant value, the measured approach time amount t will be canceled.

[0017] Next, a pressure characteristic is computed based on the approach time amount t (step S5). Then, the mistake generating signal c according to the computed pressure characteristic is sent out to the game control section 14 (step S6). And the game control section 14 chooses the car-in-front transit program which makes car-in-front 17b a transit mistake condition corresponding to a pressure characteristic by the input of the mistake generating signal c (step S7).

[0018] A transit mistake means the condition slowed down sharply, without the automobile under transit turning at a curve and turning off it, the condition from which it separated from the ball-race course 16, and being further collided with side-attachment-wall 16a of the ball-race course 16. This transit mistake generating condition is explained below by making a curve run state into an example. As shown in drawing 4 , it faces that an automobile turns at a curve and there is ideal transit Rhine, and it can bend quickly by passing along this transit Rhine without a straight degree's reducing a travel speed few. When it passes along ideal transit Rhine e (refer to drawing 4 (a)), it can turn at a curve, without reducing a travel speed, but when a transit mistake cannot be made and it cannot pass along ideal transit Rhine e (refer to drawing 4 (b)), if it does not slow down greatly, it cannot turn at a curve.

[0019] That is, as shown in drawing 5 , in the case of transit Rhine f, it must crash into side-attachment-wall 16a at exaggerated speed, and sudden moderation of the case of transit Rhine g must be carried out just before side-attachment-wall 16a at exaggerated speed, in the case of transit Rhine h, the sense must be changed by the acute angle, and it will require large moderation. These transit mistakes are generated corresponding to a pressure characteristic, even when it is the pressure characteristic 1 which a transit mistake does not generate but a transit mistake generates certainly from the case where it is the pressure characteristic 0 as the usual transit program.

[0020] Therefore, the transit control section 13 functions as a transit control means which controls the run state of the car in front corresponding to a pressure characteristic. The game control section 14 has CPU14a, and is controlling the game at large [, such as game advance of the ball-race game based on a game program,]. The game control section 14 makes the car in front which runs the front of the two automobiles which get mixed up produce a transit mistake, when the mistake generating signal c inputs into CPU14a. The image of a transit mistake is displayed on screen 15a by choosing a car-in-front transit mistake pattern from each automobile transit pattern in a game program.

[0021] Next, an operation of ball-race game equipment is explained. First, automobile 17a under transit on a ball-race course approaches the car-in-front 17b, and while the clearance d with car-in-front 17b becomes fixed within the limits, it continues (refer to drawing 6 (a)) running by maintaining the condition. Then, if transit of having maintained the condition becomes beyond fixed time amount, the transit control section 13 sends out the mistake generating signal c based on a pressure characteristic to the game control section 14. The game control section 14 makes car-in-front 17b produce a transit mistake by the input of the mistake generating signal c (refer to drawing 6 (b)).

[0022] Therefore, also in a ball-race game, the game which has a sense of reality more can be performed

from the ability of the same technique as the actual car race of inviting a mistake to it, putting the car in front under pressure to be used. Moreover, in addition to the clearance d of two automobiles which get mixed up, and the approach time amount t, the travel speed v of the automobile located in the back of the two automobiles may prescribe a pressure characteristic. The pressure characteristic in this case can be expressed with the formula of the pressure characteristic =(1 / clearance d) x approach time amount tx travel speed v. For example, naturally a pressure characteristic also becomes larger from the direction run hard at the travel speed v of 300 km/h serving as a bigger pressure to car-in-front 17b by that automobile 17a runs car-in-front 17b hard at the travel speed v of 100 km/h, and running hard at the travel speed v of 300 km/h.

[0023] Therefore, the pressure characteristic which automobile 17a generates can make a travel speed v the ball-race game whose introduction reliance sense of reality increased still more elements of the competition in an actual migration competition from considering as an element. In addition, not only the above-mentioned example but various deformation is possible for this invention, for example, it is applicable similarly to perform migration competition, if it has the element which competes for others, an airplane, a ship, etc. [automobile]

[0024]

[Effect of the Invention] According to this invention the above passage, it can consider as the migration competition game which takes in the element of the competition in an actual migration competition, and has a reliance sense of reality.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block diagram showing the outline configuration of the ball-race game equipment by one example of this invention.
[Drawing 2] It is the explanatory view showing the display screen of ball-race game equipment.
[Drawing 3] It is the flow chart which shows the operation procedure of a pressure characteristic.
[Drawing 4] Transit Rhine of an automobile is shown, (a) is the explanatory view of ideal transit Rhine, and (b) is the explanatory view of a transit mistake.
[Drawing 5] It is the explanatory view showing various transit mistake conditions.
[Drawing 6] The automobile which runs a ball-race course top is shown, and the explanatory view in the condition that (a) has put under pressure, and (b) are the explanatory views in the condition that the transit mistake arose.
[Description of Notations]
10 -- Ball-race game equipment (migration competition game equipment)
11 -- Distance detecting element (distance detection means)
12 -- Time amount detecting element (time amount detection means)
13 -- Transit control section (transit control means)
14 -- Game control section
14 a--CPU
15 -- Display
15a -- Screen
16 -- Ball-race course (setting course)
16a -- Side attachment wall
17a -- Automobile (predetermined migration means)
17b -- Car in front (front ****** means)
17c -- Car in front (front ****** means)
17d -- Consecutiveness vehicle
a -- Clearance data
b -- Approach time data
c -- Mistake generating signal
d -- Clearance
e -- Ideal transit Rhine
f -- Transit Rhine
g -- Transit Rhine
h -- Transit Rhine
t -- Approach time amount
v -- Travel speed

[Translation done.]

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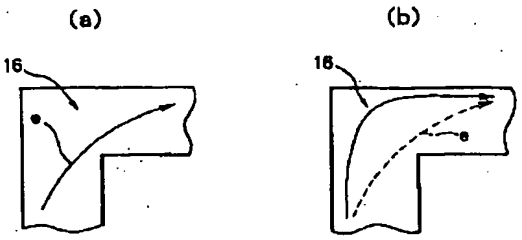
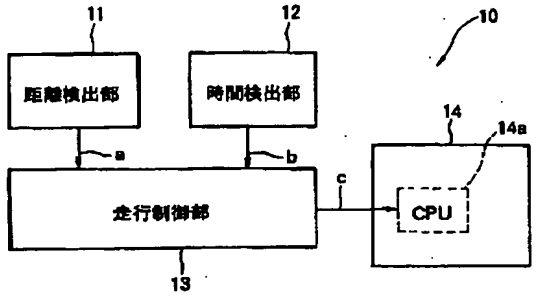
DRAWINGS

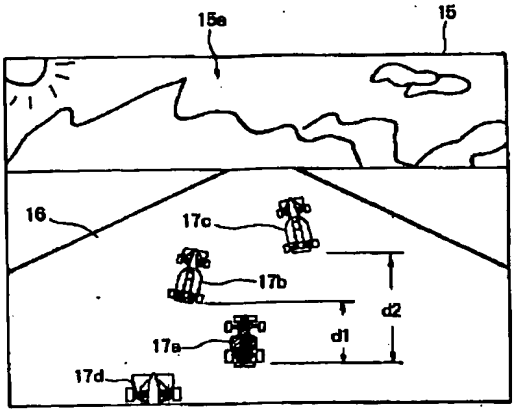
[Drawing 4]



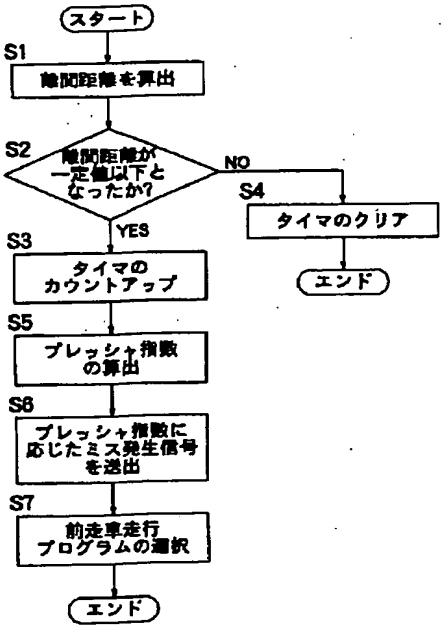
[Drawing 1]



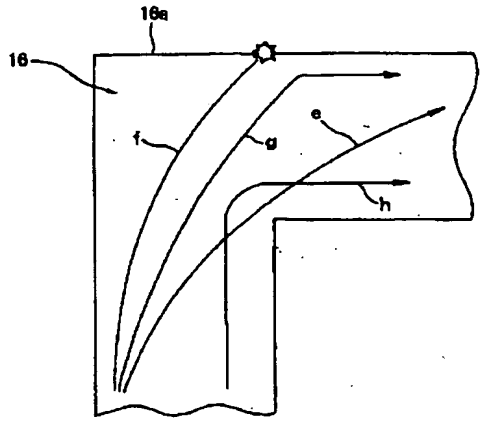
[Drawing 2]



[Drawing 3]

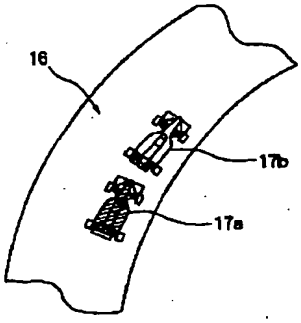


[Drawing 5]

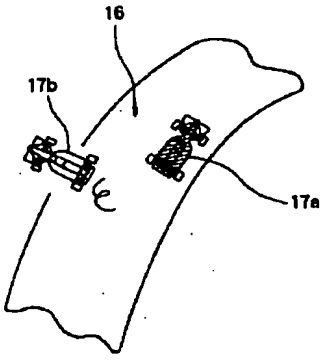


[Drawing 6]

(a)



(b)



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(22)出願日　平成６年(1994)６月８日

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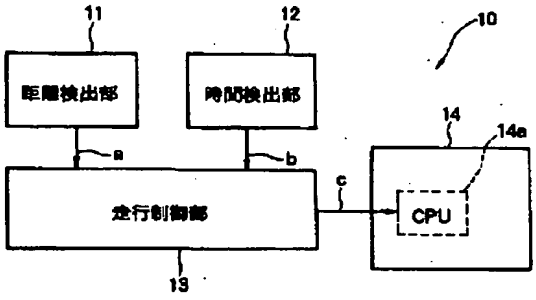
(54)【発明の名称】　移動競争ゲーム装置

(57)【要約】
【目的】　実際の移動競争における競り合いの要素を取入れたより現実感のある移動競争ゲーム装置を提供する。
【構成】　設定コース上を移動する複数の移動手段により競争を行う移動競争ゲーム装置において、自動車（所定移動手段）１７ａと自動車１７ａの前に位置する前走車（前走移動手段）１７ｂとの離間距離ｄを検出する距離検出部（距離検出手段）１０と、自動車１７ａが前走車１７ｂから一定の離間距離ｄ内に位置する接近時間ｔを検出する時間検出部（時間検出手段）１２と、離間距離ｄと接近時間ｔに基づくプレッシャ指数を演算し、プレッシャ指数に対応して前走車１７ｂの走行状態を制御する走行制御部（走行制御手段）１３とを有する。



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【特許請求の範囲】
【請求項１】　設定コース上を移動する複数の移動手段により競争を行う移動競争ゲーム装置において、
所定移動手段と前記所定移動手段の前に位置する前走移動手段との離間距離を検出する距離検出手段と、
前記所定移動手段が前記前走移動手段から一定の離間距離内に位置する接近時間を検出する時間検出手段と、
前記離間距離と前記接近時間に基づくプレッシャ指数を演算し、前記プレッシャ指数に対応して前記前走移動手段の走行状態を制御する走行制御手段とを有することを特徴とする移動競争ゲーム装置。
【請求項２】　請求項１記載の移動競争ゲーム装置において、
前記所定移動手段の移動速度を検出する速度検出手段を有し、
前記走行制御手段は、前記離間距離、前記接近時間及び前記移動速度に基づくプレッシャ指数を演算し、前記プレッシャ指数に対応して前記前走移動手段の走行状態を制御することを特徴とする移動競争ゲーム装置。
【発明の詳細な説明】
【０００１】
【産業上の利用分野】本発明は、自動車レースをゲーム化したレースゲーム等を行う移動競争ゲーム装置に関する。
【０００２】
【従来の技術】従来、設定コース上を移動する複数の移動手段により競争を行う移動競争ゲーム装置が知られている。このような移動競争ゲーム装置として、例えば、ディスプレイの画面上にレースコース及びそのレースコース上を走行する複数の自動車（移動手段）を画像表示し、プレーヤが自動車の走行方向や走行速度をコントロールしてレースコース上を走行させるレースゲーム装置がある。
【０００３】そして、例えば、複数のプレーヤが各々の自動車をコントロールしてレースコース上を走行させながら、追い抜き或は進路を塞いだりして何れのプレーヤの自動車が先にゴールに到着するかを競い合う。
【０００４】
【発明が解決しようとする課題】しかしながら、より高度な表現でより現実感のある種々のゲームが登場するに連れ、レースゲームにおいてもより現実感のあるゲームを行うことができるレースゲーム装置をという要望がある。本発明は、上記要望に鑑みてなされたものであり、その目的は、実際の移動競争における競り合いの要素を取入れたより現実感のある移動競争ゲーム装置を提供することにある。
【０００５】
【課題を解決するための手段】上記目的は、設定コース上を移動する複数の移動手段により競争を行う移動競争ゲーム装置において、所定移動手段と前記所定移動手段の前に位置する前走移動手段との離間距離を検出する距離検出手段と、前記所定移動手段が前記前走移動手段から一定の離間距離内に位置する接近時間を検出する時間検出手段と、前記離間距離と前記接近時間に基づくプレッシャ指数を演算し、前記プレッシャ指数に対応して前記前走移動手段の走行状態を制御する走行制御手段とを有することを特徴とする移動競争ゲーム装置によって達成される。

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【０００６】また、前記所定移動手段の移動速度を検出する速度検出手段を有し、前記走行制御手段は、前記離間距離、前記接近時間及び前記移動速度に基づくプレッシャ指数を演算し、前記プレッシャ指数に対応して前記前走移動手段の走行状態を制御することを特徴とする移動競争ゲーム装置によって達成される。
【０００７】
【作用】本発明によれば、設定コース上を移動する複数の移動手段により競争を行う移動競争ゲーム装置において、所定移動手段と所定移動手段の前に位置する前走移動手段との離間距離を検出する距離検出手段と、所定移動手段が前走移動手段から一定の離間距離内に位置する接近時間を検出する時間検出手段と、離間距離と接近時間に基づくプレッシャ指数を演算し、プレッシャ指数に対応して前走移動手段の走行状態を制御する走行制御手段とを有することから、所定移動手段の発生するプレッシャ指数により前走移動手段が走行ミスを起こすという、実際の移動競争における競り合いの要素を取り入れたより現実感のある移動競争ゲームとすることができる。
【０００８】また、所定移動手段の移動速度を検出する速度検出手段を有し、走行制御手段は、離間距離、接近時間及び移動速度に基づくプレッシャ指数を演算し、プレッシャ指数に対応して前走移動手段の走行状態を制御することから、所定移動手段の発生するプレッシャ指数は移動速度も要素として、実際の移動競争における競り合いの要素を更に多く取り入れたより現実感の増した移動競争ゲームとすることができる。
【０００９】
【実施例】以下、本発明の一実施例による移動競争ゲーム装置を、図面を参照して説明する。図１に示すように、レースゲーム装置（移動競争ゲーム装置）１０は、距離検出部（距離検出手段）１１、時間検出部（時間検出手段）１２、走行制御部（走行制御手段）１３、及びゲーム制御部１４を有している。
【００１０】このレースゲーム装置１０は、図２に示すように、ディスプレイ１５の画面１５ａ上にレースコース（設定コース）１６及びそのレースコース１６上を走行する複数の自動車１７ａ，１７ｂ，１７ｃ，１７ｄを、ゲームプログラムに基づいて画像表示し、プレーヤ（図示せず）が、操作手段（図示せず）を介して、自分の自動車（例えば自動車１７ａ）の走行方向や走行速度

を任意にコントロールすることにより、ゴールへの到着順を競い合うレースゲームを行うものである。

【００１１】なお、図２には、４台の自動車が表示されているが、自動車の数は４台に限らない。自動車の走行に際し、プレーヤは、左右にカーブしたり或は幅を変化させて設定されたレースコース１６上から外れないようにしつつ、自分の自動車（所定移動手段）１７ａの前を走る前走車（前走移動手段）１７ｂ，１７ｃを抜き且つ自動車１７ａの後ろを走る後続車１７ｄに抜かれずに、自動車１７ａの走行をコントロールする。

【００１２】距離検出部１１は、前後する二台の自動車１７ａと前走車１７ｂ（或は１７ｃ）の離間距離ｄ１（或はｄ２）を検出しており、随時、検出した離間距離データａを走行制御部１３に送出する。時間検出部１２は、タイマ管理により自動車１７ａが前走車１７ｂ（或は１７ｃ）から一定の離間距離ｄ内に位置する接近時間ｔを検出しており、一定の離間距離ｄ内に位置する間は検出した接近時間データｂを走行制御部１３に送出する。この一定の離間距離ｄは、ゲームの種類や方法により任意に設定される。

【００１３】走行制御部１３は、離間距離データａによる離間距離ｄと接近時間データｂによる接近時間ｔに基づくプレッシャ指数を演算し、このプレッシャ指数が予め設定された所定値（ミス発生基準値）以上になるとミス発生信号ｃをゲーム制御部１４に送出する。プレッシャ指数とは、走行中の自動車が走行ミスを起こす起こし易さの度合を示すものであり、プレッシャ指数が大きくなるに連れて走行ミスを発生する確率が高くなる。

【００１４】このプレッシャ指数は、前後する二台の自動車の離間距離ｄ及び接近時間ｔにより規定されており、

プレッシャ指数＝（１／離間距離ｄ）×接近時間ｔ

の式で表すことができる。即ち、例えば自動車１７ａが、前走車１７ｂに接近して予め設定された一定の離間距離ｄ内に位置し、且つその状態を一定時間以上間維持することにより、維持状態に対応するプレッシャ指数が前走車１７ｂに付与される。当然、離間距離ｄが短い程及び接近時間ｔが長い程、プレッシャ指数は大きくなる。

【００１５】プレッシャ指数の演算手順を、図３のフローチャートを基に説明する。先ず、二台の自動車（例えば、自動車１７ａとその前走車１７ｂ。図２参照）の離間距離ｄ１（図２参照）を算出する（ステップＳ１）。続いて、算出された離間距離ｄ１が一定値以下となったか否かが判断される（ステップＳ２）。

【００１６】ここで、離間距離ｄ１が一定値以下になった（ＹＥＳ）場合は、タイマのカウントアップが行われ、離間距離ｄ１が一定値以下に維持された時間である接近時間ｔが計測される（ステップＳ３）。一方、離間距離ｄ１が一定値以下にならない（ＮＯ）場合は、タイマがクリアされて初期状態に戻る（ステップＳ４）。即ち、例えば、離間距離ｄ１が一定値以下になった後に前走車１７ｂが離れてしまって離間距離ｄ１が一定値以下でなくなると、計測された接近時間ｔは破棄される。

【００１７】次に、接近時間ｔに基づきプレッシャ指数を算出する（ステップＳ５）。続いて、算出されたプレッシャ指数に応じたミス発生信号ｃをゲーム制御部１４に送出する（ステップＳ６）。そして、ミス発生信号ｃの入力により、ゲーム制御部１４は、プレッシャ指数に対応して前走車１７ｂを走行ミス状態とする前走車走行プログラムを選択する（ステップＳ７）。

【００１８】走行ミスとは、走行中の自動車がカーブを曲がり切れずに大幅に減速した状態、レースコース１６から外れた状態、更にはレースコース１６の側壁１６ａに衝突した状態等になることをいう。この走行ミス発生状態を、カーブ走行状態を例として以下に説明する。図４に示すように、自動車がカーブを曲がるに際しては理想的な走行ラインがあり、この走行ラインを通ることにより、曲がる度合が少なく走行速度を落とさないで速く曲がることができる。理想走行ラインｅを通る場合（図４（ａ）参照）は、走行速度を落とさずにカーブを曲がることができるが、走行ミスをして理想走行ラインｅを通ることができない場合（図４（ｂ）参照）は、大きく減速しなければカーブを曲がることができない。

【００１９】つまり、図５に示すように、走行ラインｆの場合はオーバスピードで側壁１６ａに激突してしまい、走行ラインｇの場合はオーバスピードで側壁１６ａの直前で急減速しなければならず、走行ラインｈの場合は急角度で向きを変えなければならず大幅な減速を要することとなる。これらの走行ミスは、走行ミスが発生せず通常の走行プログラム通りのプレッシャ指数０の場合から、確実に走行ミスが発生するプレッシャ指数１の場合迄、プレッシャ指数に対応して発生する。

【００２０】従って、走行制御部１３は、プレッシャ指数に対応して前走車の走行状態を制御する走行制御手段として機能する。ゲーム制御部１４は、ＣＰＵ１４ａを有しており、ゲームプログラムに基づくレースゲームのゲーム進行等ゲーム全般を制御している。ミス発生信号ｃがＣＰＵ１４ａに入力することにより、ゲーム制御部１４は、前後する二台の自動車の内の前を走行する前走車に走行ミスを生じさせる。走行ミスの画像は、ゲームプログラム中の各自動車走行パターンから前走車走行ミスパターンを選択することにより、画面１５ａ上に表示される。

【００２１】次に、レースゲーム装置の作用を説明する。先ず、レースコース上を走行中の自動車１７ａがその前走車１７ｂに接近し、前走車１７ｂとの離間距離ｄが一定範囲内となると共にその状態を維持して走行し続ける（図６（ａ）参照）。続いて、その状態を維持したままの走行が一定時間以上となると、走行制御部１３

が、プレッシャ指数に基づくミス発生信号ｃをゲーム制御部１４に送出する。ミス発生信号ｃの入力により、ゲーム制御部１４は前走車１７ｂに走行ミスを生じさせる（図６（ｂ）参照）。

【００２２】従って、レースゲームにおいても、前走車にプレッシャをかけてミスを誘うという実際の自動車レースと同様のテクニックを使用することができることから、より現実感のあるゲームを行うことができる。また、プレッシャ指数を、前後する二台の自動車の離間距離ｄ及び接近時間ｔに加えて、二台の自動車の内の後方に位置する自動車の走行速度ｖによって規定しても良い。この場合のプレッシャ指数は、

プレッシャ指数＝（１／離間距離ｄ）×接近時間ｔ×走行速度ｖ

の式で表すことができる。例えば、自動車１７ａが１００ｋｍ／ｈの走行速度ｖで前走車１７ｂを追走するのと、３００ｋｍ／ｈの走行速度ｖで追走するのとでは、３００ｋｍ／ｈの走行速度ｖで追走する方が前走車１７ｂに対してより大きなプレッシャとなることから、当然プレッシャ指数もより大きくなる。

【００２３】従って、自動車１７ａの発生するプレッシャ指数は走行速度ｖも要素とすることから、実際の移動競争における競り合いの要素を更に多く取り入れたより現実感の増したレースゲームとすることができる。なお、本発明は上記実施例に限らず種々の変形が可能であり、例えば、移動競争を行うのは自動車の他、飛行機や船等競り合う要素を有するものであれば、同様に適用することができる。

【００２４】

【発明の効果】以上の通り、本発明によれば、実際の移動競争における競り合いの要素を取り入れたより現実感の有る移動競争ゲームとすることができる。

【図面の簡単な説明】

【図１】本発明の一実施例によるレースゲーム装置の概略構成を示すブロック図である。

【図２】レースゲーム装置のディスプレイ画面を示す説明図である。

【図３】プレッシャ指数の演算手順を示すフローチャートである。

【図４】自動車の走行ラインを示しており、（ａ）は理想走行ラインの説明図、（ｂ）は走行ミスの説明図である。

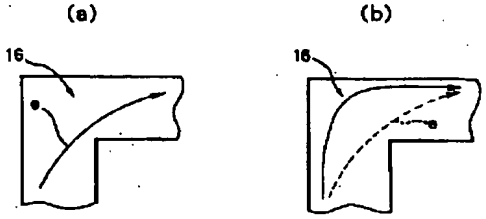
【図５】様々な走行ミス状態を示す説明図である。

【図６】レースコース上を走行する自動車を示しており、（ａ）はプレッシャをかけている状態の説明図、（ｂ）は走行ミスが起こった状態の説明図である。

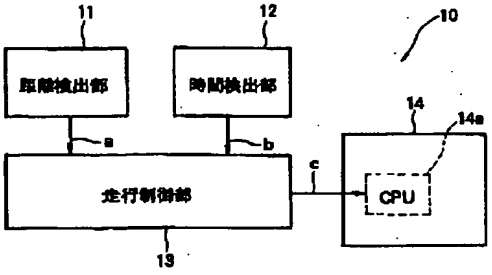
【符号の説明】

１０…レースゲーム装置（移動競争ゲーム装置）
１１…距離検出部（距離検出手段）
１２…時間検出部（時間検出手段）
１３…走行制御部（走行制御手段）
１４…ゲーム制御部
１４ａ…ＣＰＵ
１５…ディスプレイ
１５ａ…画面
１６…レースコース（設定コース）
１６ａ…側壁
１７ａ…自動車（所定移動手段）
１７ｂ…前走車（前走移動手段）
１７ｃ…前走車（前走移動手段）
１７ｄ…後続車
ａ…離間距離データ
ｂ…接近時間データ
ｃ…ミス発生信号
ｄ…離間距離
ｅ…理想走行ライン
ｆ…走行ライン
ｇ…走行ライン
ｈ…走行ライン
ｔ…接近時間
ｖ…走行速度

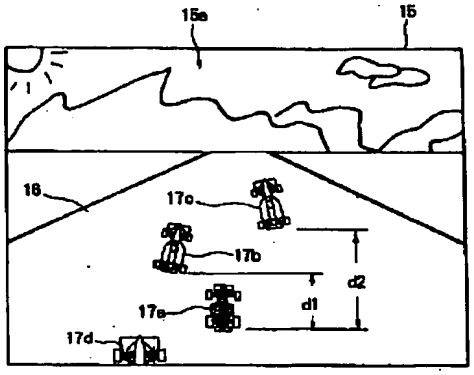
【図４】



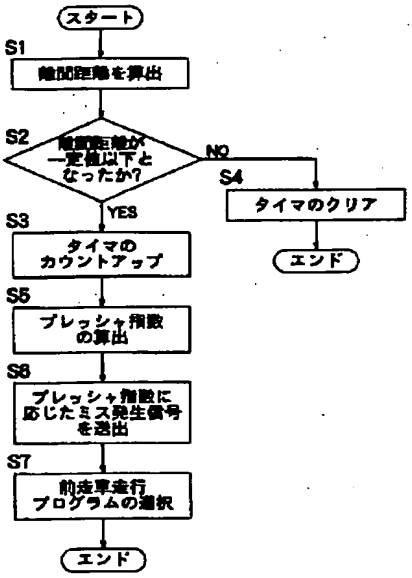
【図１】


11
12
10
距離検出部
時間検出部
14
14a
a
b
c
走行制御部
CPU
13

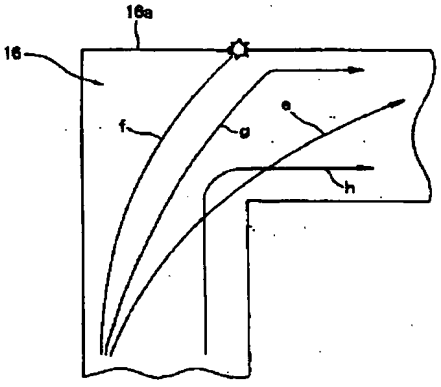
【図２】


15a
15
16
17c
17b
17e
17d
d2
d1

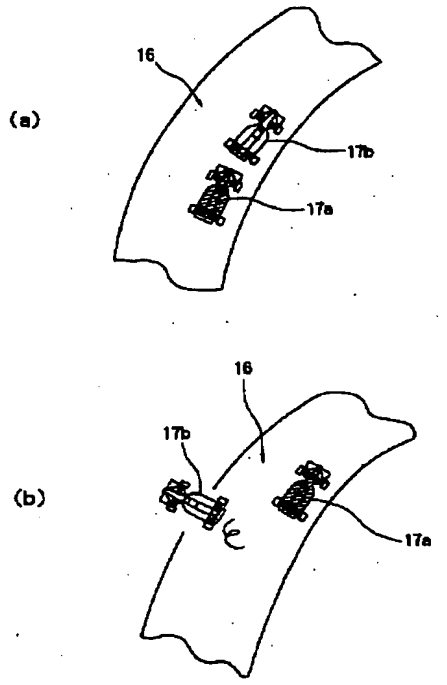
【図３】


スタート
S1
車間距離を算出
S2
車間距離が一定値以下となったか?
NO
S4
タイマのクリア
エンド
YES
S3
タイマのカウントアップ
S5
プレッシャ指数の算出
S6
プレッシャ指数に応じたミス発生信号を送出
S7
前走車走行プログラムの選択
エンド

【図５】


16a
16
f
g
e
h

【図６】



PATENT ABSTRACTS OF JAPAN

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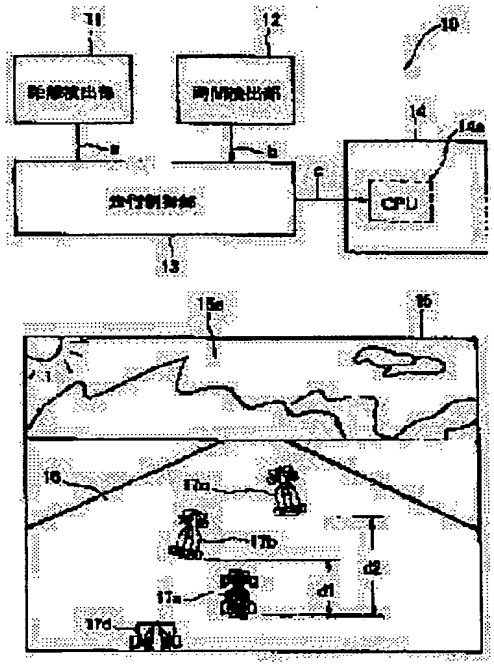
(71)Applicant : SEGA ENTERP LTD
(72)Inventor : TSUCHIYA JUNICHI

(54) MOVING COMPETITION GAME DEVICE

(57)Abstract:
PURPOSE: To provide the moving competition game device which more improves reality by introducing the factors of a competition in a real moving competition.
CONSTITUTION: Concerning the moving competition game device for making the competition with plural moving means to move on a set course, this device is provided with a distance detecting part (distance detecting means) 10 for detecting a separate distance (d) between an automobile (prescribed moving means) 17a and a preceding vehicle (preceding moving means) 17b positioned in front of the automobile 17a, time detecting part (time detecting means) 12 for detecting the time of approach for the automobile 17a to be positioned within the fixed separate distance, and travel control part (travel control means) 13 for calculating a pressure index based on the separate distance (d) and the time of approach and controlling the traveling state of the preceding vehicle 17b corresponding to the pressure index.



LEGAL STATUS

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[Date of extinction of right]	

JP,07-328229,A
* NOTICES *

CLAIMS

[Claim(s)]

[Claim 1] Move competition game equipment which competes by two or more move meanses characterized by providing the following to move in a setting course top. A distance detection means to detect the clearance of a predetermined move means and a front ****** means by which it is located before the aforementioned predetermined move means. Time [for the aforementioned predetermined move means to detect the approach time located in fixed clearance from the ****** means before the above] detection means. Run control means which calculate the pressure index based on the aforementioned clearance and the aforementioned approach time, and control the run state of the ****** means before the above corresponding to the aforementioned pressure index.

[Claim 2] It is move competition game equipment characterized by to have a speed-detection means to detect the traverse speed of the aforementioned predetermined move means, in move competition game equipment according to claim 1, and for the aforementioned run control means to calculate the pressure index based on the aforementioned clearance, the aforementioned approach time, and the aforementioned traverse speed, and to control the run state of the ****** means before the above corresponding to the aforementioned pressure index.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention relates to the move competition game equipment which performs the race game which game-ized the car race.

[0002]

[Description of the Prior Art] Conventionally, the move competition game equipment which competes by two or more move meanses to move in a setting course top is known. As such

move competition game equipment, image display of two or more automobiles (move means) which run a race course and the race course top for example, on a scope is carried out, and there is race game equipment with which a player controls the run direction and travel speed of an automobile, and makes it run a race course top.

[0003] And while two or more players control each automobile and make it run a race course top for example, it passes, or a course is closed or it vies in whether carry out and the automobile of which player reaches gall previously.

[0004]

[Problem(s) to be Solved by the Invention] however, the race game equipment which can perform the game in which the various game which has a sense of reality more takes for appearing, and a nearby sense of reality has it in a race game by more advanced expression -- ** -- there is a request to say this invention is made in view of the above-mentioned request, and the purpose is in offering the move competition game equipment which takes in the element of the competition in an actual move competition, and has a reliance sense of reality.

[0005]

[Means for Solving the Problem] In the move competition game equipment which competes by two or more move meanses by which the above-mentioned purpose moves in a setting course top A distance detection means to detect the clearance of a predetermined move means and a front ****** means by which it is located before the aforementioned predetermined move means, A time [for the aforementioned predetermined move means to detect the approach time located in fixed clearance from the ****** means before the above] detection means, The pressure index based on the aforementioned clearance and the aforementioned approach time is calculated, and it is attained by the move competition game equipment characterized by having the run control means which control the run state of the ****** means before the above corresponding to the aforementioned pressure index.

[0006] Moreover, it has a speed-detection means to detect the traverse speed of the aforementioned predetermined move means, and the aforementioned run control means calculate the pressure index based on the aforementioned clearance, the aforementioned approach time, and the aforementioned traverse speed, and are attained by the move competition game equipment characterized by controlling the run state of the ****** means before the above corresponding to the aforementioned pressure index.

[0007]

[Function] In the move competition game equipment which competes by two or more move meanses to move in a setting course top according to this invention A distance detection means to detect the clearance of a predetermined move means and a front ****** means by which it is located before a predetermined move means, A time [for a predetermined move means to detect the approach time located in fixed clearance from a front ****** means] detection means, From having the run control means which calculate the pressure index based on clearance and approach time, and control the run state of a front ****** means corresponding to a pressure index It can consider as the move competition game which takes in the element of the competition in an actual move competition that a front ****** means causes a run mistake with the pressure index which a predetermined move means generates,

and has a reliance sense of reality.

[0008] Moreover, it has a speed-detection means detect the traverse speed of a predetermined move means, and since run control means calculate the pressure index based on clearance, approach time, and traverse speed and control the run state of a front ****** means corresponding to a pressure index, they can make the pressure index which a predetermined move means generates the move competition game in which the introduction reliance sense of reality of traverse speed increased still more elements of the competition in an actual move competition as an element.

[0009]

[Example] Hereafter, the move competition game equipment by one example of this invention is explained with reference to a drawing. As shown in drawing 1 , race game equipment (move competition game equipment) 10 has the distance detecting element (distance detection means) 11, the time detecting element (time detection means) 12, the run control section (run control means) 13, and the game control section 14.

[0010] As shown in drawing 2 , this race game equipment 10 two or more automobiles 17a, 17b, 17c, and 17d which run its race course (setting course) 16 and race course 16 top on screen 15a of a display 15 When image display is carried out based on a game program and a player (not shown) controls arbitrarily its run direction and travel speed of an automobile (for example, automobile 17a) through an operation means (not shown), the race game which vies in the order of arrival to gall is performed.

[0011] In addition, although four automobiles are displayed on drawing 2 , the number of automobiles is not restricted to four sets. A run of automobile 17a is controlled without being extracted by 17d of consecutiveness vehicles which extract front **** (front ****** means) 17b and 17c which run their automobile (predetermined move means) 17a front, and run the back of automobile 17a turning a player to right and left, or making it not separate from the race course 16 which width of face was changed on the occasion of the run of an automobile, and was set up.

[0012] The distance detecting element 11 has detected the clearance d1 (or d2) of two automobiles 17a which gets mixed up, and front **** 17b (or 17c), and sends out the detected clearance data a to the run control section 13 at any time. The time detecting element 12 has detected the approach time t when automobile 17a is located in the fixed clearance d from front **** 17b (or 17c) by timer management, and while being located in the fixed clearance d, it sends out detected approach time-data b to the run control section 13. This fixed clearance d is arbitrarily set up by the kind and method of a game.

[0013] The run control section 13 calculates the pressure index based on the approach time t by the clearance d by the clearance data a, and approach time-data b, and if it becomes beyond the predetermined value (mistake generating reference value) to which this pressure index was set beforehand, it sends out the mistake generating signal c to the game control section 14. A pressure index shows the degree of the ease of starting from which the automobile under run starts a run mistake, and the probability that a pressure index will take for becoming large and will generate a run mistake becomes high.

[0014] This pressure index is specified by the clearance d of two automobiles which get mixed

up, and the approach time t, and can be expressed with the formula of the pressure index =(1 / clearance d) x approach time t. That is, when automobile 17a is located in the fixed clearance d which approached front **** 17b and was set up beforehand and maintains the state in between more than fixed time, for example, the pressure index corresponding to a maintenance state is given to front **** 17b. A pressure index becomes large, so that the approach time t is naturally so long that Clearance d is short.

[0015] The operation procedure of a pressure index is explained based on the flow chart of drawing 3 . First, two automobiles (for example, automobile 17a and its front **** 17b.) The clearance d1 (refer to drawing 2) of referring to drawing 2 is computed (Step S1). Then, it is judged whether the computed clearance d1 became below constant value (Step S2).

[0016] Here, when clearance d1 becomes below constant value (YES), count-up of a timer is performed and the approach time t which is the time in which clearance d1 was maintained below at constant value is measured (Step S3). On the other hand, a timer is cleared and (NO) case returns to an initial state (step S4). [from which clearance d1 does not become below constant value] That is, for example, if front **** 17b separates and clearance d1 is no longer below constant value after clearance d1 becomes below constant value, the measured approach time t will be canceled.

[0017] Next, a pressure index is computed based on the approach time t (Step S5). Then, the mistake generating signal c according to the computed pressure index is sent out to the game control section 14 (Step S6). And the game control section 14 chooses the front **** run program which makes front **** 17b a run mistake state corresponding to a pressure index by the input of the mistake generating signal c (Step S7).

[0018] A bird clapper is said to the state slowed down sharply, without the automobile under run turning at a curve and a run mistake going out, the state from which it separated from the race course 16, the state where it collided with side-attachment-wall 16a of the race course 16 further, etc. This run mistake generating state is explained below by making a curve run state into an example. As shown in drawing 4 , it faces that an automobile turns at a curve and there is an ideal run line, and it can bend quickly by passing along this run line without a straight degree's reducing a travel speed few. Although it can turn at a curve, without reducing a travel speed when it passes along the ideal run line e (refer to drawing 4 (a)), if it does not slow down greatly when a run mistake cannot be made and it cannot pass along the ideal run line e (refer to drawing 4 (b)), it cannot turn at a curve.

[0019] That is, as shown in drawing 5 , in the case of the run line f, it must crash into side-attachment-wall 16a by overspeed, and the sudden slowdown of the case of the run line g must be carried out just before side-attachment-wall 16a by overspeed, in the case of the run line h, the sense must be changed by the acute angle, and it will require a large slowdown. These run mistakes are generated corresponding to a pressure index, even when it is the pressure index 1 which a run mistake does not generate but a run mistake generates certainly from the case where it is the pressure index 0 as the usual run program.

[0020] Therefore, the run control section 13 functions as run control means which control the run state of front **** corresponding to a pressure index. The game control section 14 has CPU14a, and is controlling the game at large [, such as game advance of the race game based

on a game program,]. The game control section 14 makes front **** which runs the front of the two automobiles which get mixed up produce a run mistake, when the mistake generating signal c inputs into CPU14a. The picture of a run mistake is displayed on screen 15a by choosing a front **** run mistake pattern from each automobile run pattern in a game program.

[0021] Next, an operation of race game equipment is explained. First, automobile 17a under run on a race course approaches the front **** 17b, and while the clearance d with front **** 17b becomes fixed within the limits, it continues (refer to drawing 6 (a)) running by maintaining the state. Then, if a run of having maintained the state becomes more than fixed time, the run control section 13 sends out the mistake generating signal c based on a pressure index to the game control section 14. The game control section 14 makes front **** 17b produce a run mistake by the input of the mistake generating signal c (refer to drawing 6 (b)).

[0022] Therefore, also in a race game, the game which has an actual feeling more can be performed from the ability of the same technique as the actual car race of inviting a mistake, putting front **** under pressure to be used. Moreover, in addition to the clearance d of two automobiles which get mixed up, and the approach time t, the travel speed v of the automobile located in the back of the two automobiles may prescribe a pressure index. The pressure index in this case can be expressed with the formula of the pressure index =(1 / clearance d) x approach time tx travel speed v. For example, naturally the direction run hard at the travel speed v of 300 km/h becomes larger [a pressure index] from a bigger pressure and a bigger bird clapper to front **** 17b by that automobile 17a runs front **** 17b hard at the travel speed v of 100 km/h, and running hard at the travel speed v of 300 km/h.

[0023] Therefore, the pressure index which automobile 17a generates can make a travel speed v the race game whose introduction reliance actual feeling increased still more elements of the competition in an actual move competition from considering as an element. In addition, not only the above-mentioned example but various deformation is possible for this invention, for example, it is applicable similarly to perform move competition, if it has the element which competes for others, an airplane, a ship, etc. [automobile]

[0024]

[Effect of the Invention] According to this invention the above passage, it can consider as the move competition game which takes in the element of the competition in an actual move competition, and has a reliance actual feeling.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the outline composition of the race game equipment by one example of this invention.

[Drawing 2] It is explanatory drawing showing the display screen of race game equipment.

[Drawing 3] It is the flow chart which shows the operation procedure of a pressure index.

[Drawing 4] The run line of an automobile is shown, (a) is explanatory drawing of an ideal run

line, and (b) is explanatory drawing of a run mistake.

[Drawing 5] It is explanatory drawing showing various run mistake states.

[Drawing 6] The automobile which runs a race course top is shown and explanatory drawing in the state where (a) has put under pressure, and (b) are explanatory drawings in the state where the run mistake arose.

[Description of Notations]

10 -- Race game equipment (move competition game equipment)
11 -- Distance detecting element (distance detection means)
12 -- Time detecting element (time detection means)
13 -- Run control section (run control means)
14 -- Game control section
14 a--CPU
15 -- Display
15a -- Screen
16 -- Race course (setting course)
16a -- Side attachment wall
17a -- Automobile (predetermined move means)
17b -- Before **** (front ****** means)
17c -- Before **** (front ****** means)
17d -- Consecutiveness vehicle
a -- Clearance data
b -- Approach time data
c -- Mistake generating signal
d -- Clearance
e -- Ideal run line
f -- Run line
g -- Run line
h -- Run line
t -- Approach time
v -- Travel speed

CORRECTION or AMENDMENT

[Official Gazette Type] Printing of amendment by the convention of 2 of Article 17 of patent law.

[Section partition] The 2nd partition of the 1st section.

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[Procedure amendment 1]
[Document to be Amended] Specification.
[Item(s) to be Amended] The name of invention.
[Method of Amendment] Change.
[Proposed Amendment]
[Title of the Invention] The competition game method and equipment.
[Procedure amendment 2]
[Document to be Amended] Specification.
[Item(s) to be Amended] Claim.
[Method of Amendment] Change.
[Proposed Amendment]
[Claim(s)]
[Claim 1] In the competition game equipment which vies in the order of arrival by two or more move meanses
A distance detection means to detect the distance of a move means to move according to operation of an operator, and other move meanses to move from the aforementioned move means in the front,
Time [to detect the time in which the distance detected by the aforementioned distance detection means was maintained below at a fixed distance] detection means,
Competition game equipment characterized by having the control means to which a move means besides the above is moved as a run mistake was made according to the time detected by the aforementioned time detection means, and the distance detected by the aforementioned distance detection means.
[Claim 2] In competition game equipment according to claim 1
It has a speed-detection means to detect the speed which the aforementioned move means moves.
The aforementioned control means are competition game equipment characterized by moving a move means besides the above as a run mistake was made according to the time detected by the aforementioned time detection means, the distance detected by the aforementioned distance detection means, and the speed detected by the aforementioned speed-detection

means.

[Claim 3] In the control method of the competition game which vies in the order of arrival by two or more move meanses

The distance of a move means to move according to operation of an operator, and other move meanses to move from the aforementioned move means in the front is detected.

The time in which the distance by which detection was carried out [aforementioned] was maintained below at a fixed distance is detected.

The control method of the competition game characterized by moving a move means besides the above as a run mistake was made according to the distance by which detection was carried out [aforementioned] with the time by which detection was carried out [aforementioned].

[Claim 4] In the control method of a competition game according to claim 3

The speed which the aforementioned move means moves is detected.

The control method of the competition game characterized by moving a move means besides the above as a run mistake was made according to the time by which detection was carried out [aforementioned], the distance by which detection was carried out [aforementioned], and the speed by which detection was carried out [aforementioned].

[Claim 5] In the control method of the game which vies in the order of arrival by two or more move meanses based on the program which advances a game

The distance of a move means to move according to operation of an operator, and other move meanses to move from the aforementioned move means in the front is detected.

The time in which the distance by which detection was carried out [aforementioned] was maintained below at a fixed distance is detected.

The control method of a game of carrying out choosing from the usual run program the run program which a run mistake generates according to the result computed from the distance by which detection was carried out [aforementioned] with the time by which detection was carried out [aforementioned], and controlling movement of a move means besides the above as the feature.

[Procedure amendment 3]

[Document to be Amended] Specification.

[Item(s) to be Amended] 0001.

[Method of Amendment] Change.

[Proposed Amendment]

[0001]

[Industrial Application] this invention relates to the competition game method and equipment which vie in the order of arrival by two or more move meanses.